

Absolute UV/EUV detection based on ionization chamber measurements

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The usage of ionization chambers (IC) date back to the early 20th century and possess a wide application range, mainly as monitoring devices. A large benefit is their simplicity and robustness, compared to other methods of detecting ionizing radiation. By reason of these benefits, ionization chambers also found their way into applications in space. One example is the SolACES (Solar Auto-Calibrating EUV Spectrometer) Instrument aboard the ISS. Since early 2008 SolACES monitors the variability of the solar EUV irradiance in the wavelength region between 16.5nm and 120nm. Equipped with two grazing incidence planar grating spectrometers and two three-signal ionization chambers, each with exchangeable bandpass filters, it is able to provide absolute EUV flux data. A major challenge of the EUV radiation observation is the continuous degradation of the spectrometer efficiency - an effect strongly reducing the scientific yield and longevity of EUV monitoring instruments. The unique combination of spectrometers and (refillable) ionization chambers however, allows a recalibration of the efficiencies on a daily basis of absolute flux measurements with the ionization chambers.